

## METHOD AND APPARATUS FOR DISABLING HISTORIES IN A BROWSER

## BACKGROUND OF THE INVENTION

5     **1.     Technical Field:**

The present invention relates generally to an improved data processing system, and in particular to a method and apparatus for managing storage of data in a data processing system. Still more particularly, the present invention provides a method, apparatus, and computer implemented instructions for selectively disabling the recording of histories in a data processing system.

15     2.     Description of Related Art:

The Internet, also referred to as an "internetwork", is a set of computer networks, possibly dissimilar, joined together by means of gateways that handle data transfer and the conversion of messages from protocols of the sending network to the protocols used by the receiving network (with packets if necessary). When capitalized, the term "Internet" refers to the collection of networks and gateways that use the TCP/IP suite of protocols.

The Internet has become a cultural fixture as a source of both information and entertainment. Many businesses are creating Internet sites as an integral part of their marketing efforts, informing consumers of the products or services offered by the business or providing other information seeking to engender brand loyalty. Many federal, state, and local government agencies are also employing Internet sites for informational purposes, particularly agencies, which must interact with virtually

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(GUI) for the browser to access a source of content. The domain name is automatically converted to the Internet Protocol (IP) address by a domain name system (DNS), which is a service that translates the symbolic name entered by the user into an IP address by looking up the domain name in a database.

A number of ways are present to find out what Web pages have been viewed in a browser. For example, a disk cache is present in which various files, such as graphic images, are stored with respect to a Web page. Additionally, a history list is often recorded to identify URLs that have been visited by a user. Also, a location list containing URLs entered by the user is present. Other types of disk caches include cookies for various Web sites, which are stored in a cookie file for the browser. This recorded information are examples of a history that may be recorded for a Web page received by a user or a Web site visited by the user.

In some instances, a user may desire to prevent others from identifying Web pages and Web sites that have been viewed and visited by the user. For example, a user may purchase a present for a spouse from an on-line business through a Web site. The user may wish to keep the purchase a surprise for the spouse. This surprise may be spoiled if the spouse looks at the history list recorded by the browser. Currently, the user is required to go through these various histories and delete references back to the Web page or Web site. The procedure would include, for example, deleting references in a history list, deleting files in the disk cache, and deleting cookies in a cookie file. Such a procedure is tedious and often difficult for many users.

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Therefore, it would be advantageous to have an improved method and apparatus for eliminating tracing of Web pages viewed by a user.

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**SUMMARY OF THE INVENTION**

- 5       The present invention provides a method, apparatus,  
and computer implemented instructions for disabling or  
preventing collection of history information on a browser  
in a data processing system. A user input is received.  
In response to receiving the user input, history  
10 recording processes associated with the browser are  
disabled.

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**BRIEF DESCRIPTION OF THE DRAWINGS**

The novel features believed characteristic of the  
5 invention are set forth in the appended claims. The  
invention itself, however, as well as a preferred mode of  
use, further objectives and advantages thereof, will best  
be understood by reference to the following detailed  
description of an illustrative embodiment when read in  
10 conjunction with the accompanying drawings, wherein:

**Figure 1** is a pictorial representation of a data  
processing system in which the present invention may be  
implemented in accordance with a preferred embodiment of  
the present invention;

15 **Figure 2** is a block diagram of a data processing  
system in which the present invention may be implemented;

**Figure 3** is a diagram illustrating components used  
in disabling recording of a history in accordance with a  
preferred embodiment of the present invention;

20 **Figure 4** is a block diagram of a browser program in  
accordance with a preferred embodiment of the present  
invention;

**Figure 5** is a diagram of a Web page including a  
mechanism for disabling recording of a history in  
25 accordance with a preferred embodiment of the present  
invention;

**Figure 6** is a diagram of a graphical user interface  
(GUI) for facilitating selective removal of history  
information in accordance with a preferred embodiment of  
30 the present invention;

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**Figure 7** is a flowchart of a process used in a process associated with a Web page in accordance with a preferred embodiment of the present invention;

**Figure 8** is a flowchart of a process used for  
5 disabling recording of a history in a browser in accordance with a preferred embodiment of the present invention;

**Figure 9** is a flowchart of a process used to allow a user to selectively remove information from a history in  
10 accordance with a preferred embodiment of the present invention; and

**Figure 10** is a flowchart of a process used for deleting or discarding information from a history in accordance with a preferred embodiment of the present  
15 invention.

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**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

5           With reference now to the figures and in particular  
with reference to **Figure 1**, a pictorial representation of  
a data processing system in which the present invention  
may be implemented is depicted in accordance with a  
preferred embodiment of the present invention. A  
10 computer **100** is depicted which includes a system unit  
**102**, video display terminal **104**, keyboard **106**, storage  
devices **108**, which may include floppy drives and other  
types of permanent and removable storage media, and mouse  
**110**. Additional input devices may be included with  
15 personal computer **100**, such as, for example, a joystick,  
touchpad, touch screen, trackball, microphone, and the  
like. Computer **100** can be implemented using any suitable  
computer, such as an IBM RS/6000 computer or  
IntelliStation computer, which are products of  
20 International Business Machines Corporation, located in  
Armonk, New York. Although the depicted representation  
shows a computer, other embodiments of the present  
invention may be implemented in other types of data  
processing systems, such as a network computer. Computer  
25 **100** also preferably includes a graphical user interface  
that may be implemented by means of systems software  
residing in computer readable media in operation within  
computer **100**.

30           With reference now to **Figure 2**, a block diagram of a  
data processing system is shown in which the present  
invention may be implemented. Data processing system **200**  
is an example of a computer, such as computer **100** in



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**Figure 1**, in which code or instructions implementing the processes of the present invention may be located. Data processing system **200** employs a peripheral component interconnect (PCI) local bus architecture. Although the depicted example employs a PCI bus, other bus architectures such as Accelerated Graphics Port (AGP) and Industry Standard Architecture (ISA) may be used. Processor **202** and main memory **204** are connected to PCI local bus **206** through PCI bridge **208**. PCI bridge **208** also may include an integrated memory controller and cache memory for processor **202**. Additional connections to PCI local bus **206** may be made through direct component interconnection or through add-in boards. In the depicted example, local area network (LAN) adapter **210**, small computer system interface (SCSI) host bus adapter **212**, and expansion bus interface **214** are connected to PCI local bus **206** by direct component connection. In contrast, audio adapter **216**, graphics adapter **218**, and audio/video adapter **219** are connected to PCI local bus **206** by add-in boards inserted into expansion slots. Expansion bus interface **214** provides a connection for a keyboard and mouse adapter **220**, modem **222**, and additional memory **224**. SCSI host bus adapter **212** provides a connection for hard disk drive **226**, tape drive **228**, and CD-ROM drive **230**. Typical PCI local bus implementations will support three or four PCI expansion slots or add-in connectors.

An operating system runs on processor **202** and is used to coordinate and provide control of various components within data processing system **200** in **Figure 2**. The operating system may be a commercially available operating system such as Windows 2000, which is available from

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Microsoft Corporation. An object oriented programming system such as Java may run in conjunction with the operating system and provides calls to the operating system from Java programs or applications executing on data processing system **200**. "Java" is a trademark of Sun Microsystems, Inc. Instructions for the operating system, the object-oriented programming system, and applications or programs are located on storage devices, such as hard disk drive **226**, and may be loaded into main memory **204** for execution by processor **202**.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 2** may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash ROM (or equivalent nonvolatile memory) or optical disk drives and the like, may be used in addition to or in place of the hardware depicted in **Figure 2**. Also, the processes of the present invention may be applied to a multiprocessor data processing system.

For example, data processing system **200**, if optionally configured as a network computer, may not include SCSI host bus adapter **212**, hard disk drive **226**, tape drive **228**, and CD-ROM **230**, as noted by dotted line **232** in **Figure 2** denoting optional inclusion. In that case, the computer, to be properly called a client computer, must include some type of network communication interface, such as LAN adapter **210**, modem **222**, or the like. As another example, data processing system **200** may be a stand-alone system configured to be bootable without relying on some type of network communication interface, whether or not data processing system **200** comprises some type of network communication interface. As a further

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example, data processing system **200** may be a personal digital assistant (PDA), which is configured with ROM and/or flash ROM to provide nonvolatile memory for storing operating system files and/or user-generated data.

The depicted example in **Figure 2** and above-described examples are not meant to imply architectural limitations. For example, data processing system **200** also may be a notebook computer or hand held computer in addition to taking the form of a PDA. Data processing system **200** also may be a kiosk or a Web appliance. The processes of the present invention are performed by processor **202** using computer implemented instructions, which may be located in a memory such as, for example, main memory **204**, memory **224**, or in one or more peripheral devices **226-230**.

With reference now to **Figure 3**, a diagram illustrating components used in disabling recording of a history is depicted in accordance with a preferred embodiment of the present invention. Browser **300** is an example of a browser, which may be executing on data processing system **200** in **Figure 2**.

In this example, browser **300** receives Web page **302** for presentation. Web page **302** may be obtained by entering a URL. This URL may be stored in location list **304**. Location list **304** contains URLs entered by the user. These URLs are typically entered through a field, which is often called an "address bar". Additionally, the URL may be stored in history list **306**. Further, history list **306** stores URLs to sites visited by the user by other means, such as a selection of a link. History

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list **306** also may contain a record of the date and time a Web page was visited by the user.

Cache **308** provides for temporary storage of Web pages received by the browser. For example, images and text for Web page **302** may be stored in cache **308**. Cache **308** provides a quick way to redisplay Web page **302** if the user later returns to Web page **302**. Another storage of information that may be used to trace or identify Web pages visited by a user is cookie file **310**. A hidden data field, which may be included in the HTTP header of an HTML file, is a "cookie" data field. A cookie is an HTTP protocol header document element, which may be used to provide multiple data elements to the browser. Some Web sites may not function properly when the acceptance of cookies is disabled by the browser. Therefore, a user may not be able to access a Web site without having cookies accepted by the browser.

The information collected and stored by browser **300** are examples of data that form a history. The present invention provides a method, apparatus, and computer implemented instructions for disabling or preventing recording of a history. Recording of the history is disabled by disabling the storage of the Web page in cache **308**, and disabling this storage of the URL in history list **306** and location list **304**. Further, storage of cookies for the Web page in cookie file **310** is prevented. The normal processes used to record this type of information may be disabled in response to a disable signal. This disable signal may be generated through various mechanisms. For example, a user may select control, such as a button, displayed on browser **300**. The disable signal also may be generated using selected user

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Ids. For example, if a temporary user logs on to a browser, the persistent storage of history information is disabled. Alternatively, the user may set a preference to disable the recording of histories. The preferences  
5 may be, for example, to disable recording at a particular time of the day, a selected day of the week, or for a particular Web site.

This mechanism prevents other users of a data processing system from identifying Web pages and Web  
10 sites visited by a user. Such a feature is useful in the situation in which the user is purchasing a surprise gift for a spouse. Additionally, this feature is especially useful with public kiosks, where a user may want to avoid having other users identify Web sites visited by the  
15 user.

Location list **304**, history list **306**, cache **308**, and cookie file **310** are described as locations where information forming a history may be recorded. This information is also referred to as history information.  
20 These locations and the processes associated with the locations are presented for purposes of illustration and are not meant to limit the mechanism of the present invention to disabling recording of information to these particular locations. The mechanism of the present  
25 invention may be applied to disabling any process used to record information that can be used to provide a history of a visit to a particular Web page or Web site. In disabling processes used to record or keep histories, the mechanism of the present invention, in these examples,  
30 may employ the concept of a "sandbox" where a point in time is recorded where a user decides to not keep a history. At this point, the browser keeps track of all

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activities that occur from that point in time. When the user closes the browser or resets this option in some way, all data relating to a history is then deleted. Another concept that may be used is not keeping track of the history at all while surfing (i.e. no caching, no history). With this implementation, some information is still retained temporarily, such as cookies, which are kept because the cookies may be used to determine what happens later in a Web site.

Turning next to **Figure 4**, a block diagram of a browser program is depicted in accordance with a preferred embodiment of the present invention. A browser is an application used to navigate or view information or data in a distributed database, such as the Internet or the World Wide Web. In particular, processes may be included within browser **400** to disable recording a history.

In this example, browser **400** includes a user interface **402**, which is a graphical user interface (GUI) that allows the user to interface or communicate with browser **400**. This interface provides for selection of various functions through menus **404** and allows for navigation through navigation **406**. For example, menu **404** may allow a user to perform various functions, such as saving a file, opening a new window, displaying a history, and entering a URL. Navigation **406** allows for a user to navigate various pages and to select web sites for viewing. For example, navigation **406** may allow a user to see a previous page or a subsequent page relative to the present page. Additionally, menu **404** may allow a user to disable history recording through the selection of a button.

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Preferences such as those illustrated in **Figure 4** may be set through preferences **408**. The disablement of this history recording is accomplished by setting a preference in preference **408**.

5        Communications **410** is the mechanism with which browser **400** receives documents and other resources from a network such as the Internet. Further, communications **410** is used to send or upload documents and resources onto a network. In the depicted example, communication  
10    **410** uses HTTP. Other protocols may be used depending on the implementation. Documents that are received by browser **400** are processed by language interpretation **412**, which includes HTML unit **414** and JavaScript unit **416**. Language interpretation **412** will process a document for  
15    presentation on graphical display **418**. In particular, HTML statements are processed by HTML unit **414** for presentation while JavaScript statements are processed by JavaScript unit **416**.

Graphical display **418** includes layout unit **420**,  
20    rendering unit **422**, and window management **424**. These units are involved in presenting Web pages to a user based on results from language interpretation **412**.

Browser **400** is presented as an example of a browser program in which the present invention may be embodied.  
25    Browser **400** is not meant to imply architectural limitations to the present invention. Presently available browsers may include additional functions not shown or may omit functions shown in browser **400**. A browser may be any application that is used to search for and display  
30    content on a distributed data processing system. Browser **400** may be implemented using known browser applications,

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such Netscape Navigator or Microsoft Internet Explorer. Netscape Navigator is available from Netscape Communications Corporation while Microsoft Internet Explorer is available from Microsoft Corporation.

5       With reference now to **Figure 5**, a diagram of a Web page including a mechanism for disabling recording of a history is depicted in accordance with a preferred embodiment of the present invention. Web page **500** is an example of a Web page, which may be received and  
10       processed by browser **400** in **Figure 4**. In this example, Web page **500** includes JavaScript **502**, which contains instructions for processes to disable recording a history for Web page **500**. JavaScript **502** may cause a prompt to be presented to a user to enter an input indicating  
15       whether recording of a history should be disabled for Web page **500**. Additionally, other traces of Web page **500** may be erased or removed through the processes in JavaScript **502**. For example, traces of Web page **500** may be erased from the history list and the cache.

20       Alternatively, Web page **500** may be used to disable recording of a history for a subsequent Web page to be viewed by the user. A Web page turns this option on at the beginning with JavaScript. The option would be turned off when the JavaScript terminates or ends. At  
25       that point, all history information that is collected between those two points in time are deleted. In this example, the browser tracks the collection of this history information. Alternatively, a "no cache, no history" option is used in which cookies may still be  
30       retained.

With reference now to **Figure 6**, a diagram of a graphical user interface (GUI) for facilitating selective



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removal of history information is depicted in accordance with a preferred embodiment of the present invention. In this example, window **600** is displayed to the user when the user finishes a browser session. The browser session  
5 finishes when a user input to exit the browser is received. The information displayed in window **600** is a history for the browser session.

Field **602** displays elements **604**, **606**, and **608** from a history list generated during the browser session. These  
10 elements are various URLs and names associated with the URLs. Cookies **610**, **612**, and **614** received during the browser session are displayed in field **616**. URLs entered by a user are displayed in field **618**, and any names of files associated with Web pages stored in a cache are  
15 displayed in field **620**. In this example, URL **622** is displayed in field **618**, while files **624**, **626**, and **628** are displayed in field **620**. Entries with fields **602**, **616**, **618**, and **620** may be selected for deletion to delete particular pieces of information that form the history.

20 Field **630** contains session **632** and session **634**. These are sessions that are identified based on a user Id along with a date and time of the sessions. Domain **636** and domain **638** are found in field **640**. These entries identify different domains that have been visited using a  
25 browser. The domains are identified using domain names in these examples. By selecting entries in field **630** or field **640**, history information relating to a particular session or domain may be selectively removed. For example, all cookies, cached files, history lists, and  
30 location lists may be deleted from a history for a particular user, while similar information for another

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user is retained.

The user may select various entries within these fields using a pointing device, such as a mouse, track ball, light pen, or touch pad. Selected entries may be deleted from the history by selecting "Delete" button **642**. Selection of "Cancel" button **644** causes selected entries to become unselected. When the user is finished, selection of "Done" button **646** results in window **600** being removed from the display.

Turning next to **Figure 7**, a flowchart of a process used in a process associated with a Web page is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 7** may be implemented in a JavaScript, such as JavaScript **502** in **Figure 5**. In particular, this process may be used to allow a user to prevent the recording of a history for a browser session. In preventing or disabling a recording of a history, information actually received during the session is only temporarily stored with the information being erased or deleted after the session terminates.

The process begins by displaying an option to prevent recording a history (step **700**). A determination is then made as to whether the option has been accepted (step **702**). If the option is not accepted, the process terminates. Otherwise, a temporary storage of information in a history list for the Web page is allowed (step **704**). This step tracks entries made into the history list during the session. Alternatively, universal resource locators (URLs) and other history information may be stored in a temporary data structure for use by the user during the session. In this manner, the user may view pages visited during the session, if

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needed. This information, however, is discarded at the end of the session, in this example. Next, receipt of cookies is allowed and the saving of cookies in a cookie file for a Web page is disabled (step **706**). Then, the  
5 saving of data in a cache for the Web page is disabled (step **708**). In this example, no data is saved in the cache, which requires the information to be retrieved again on subsequent visits to the Web page. Next, saving of information into a location list is disabled (step  
10 **710**).

A determination is then made as to whether the session has terminated (step **712**). If the session does not terminate, the process returns to step **712**. When the session does terminate, the history list and any cookies  
15 received during the session are discarded (step **714**) with the process terminating thereafter. If information is saved in a history list, then that information is erased from the history list. If the information is saved in a temporary data structure, the temporary data structure is  
20 discarded. Cookies may be handled in a similar fashion.

The process illustrated in **Figure 7** allows for a history of Web sites and cookies to be maintained during a browser session. This information is discarded when the session terminates, such as when the browser is  
25 closed.

With reference now to **Figure 8**, a flowchart of a process used for disabling recording of a history in a browser is depicted in accordance with a preferred embodiment of the present invention. The process  
30 illustrated in **Figure 8** may be implemented in a browser, such as browser **400** in **Figure 4**. In this example, the saving of information in various files used by a browser

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are disabled in response to a disable signal to prevent the recording of a history. The recording of a history may resume in response to receiving an enable signal.

The process begins with a determination as to  
5 whether a disable signal has been received (step **800**). This disable signal may be generated using a number of different mechanisms. For example, a user may select a button displayed on the browser to indicate that the recording of a history is to be disabled. Alternatively,  
10 the signal may be generated through a preference set by the user. If a disable signal has not been received, the process continues to return to step **800** as long a disable signal has not been received.

Otherwise, the saving of information is disabled in  
15 a history list (step **802**). Next, the saving of cookies in a cookie file is disabled (step **804**). Saving Web pages in a cache is disabled (step **806**). Further, the saving of URLs entered by a user in a location list is disabled (step **808**).

20 Next, a determination is made as to whether an enable signal has been received (step **810**). The enable signal may be initiated by the selection of a control, such as a button, by the user. Alternatively, the signal may be generated by a preference being met. For example,  
25 the preference may be to prevent the recording of a history for a particular Web site or for a selected period of time. If enable signal has not been received the process returns to step **810**.

If the enable signal is received, the history list  
30 is enabled (step **812**). Next, the cookie file is enabled (step **814**). Then, the cache is enabled (step **816**), and the location is list in enabled (step **818**) with the

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process terminating thereafter.

Turning next to **Figure 9**, a flowchart of a process used to allow a user to selectively remove information from a history is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 9** may be implemented in a browser, such as browser **400** in **Figure 4**. In particular, the processes illustrated in **Figure 9** process user input to a GUI, such as window **600** in **Figure 6**.

10 The process begins by detecting the end of a session (step **900**). In this example, the session is a browser session. Next, entries for history items are presented in a window, such as window **600** in **Figure 6** (step **902**). These history items may be, for example, entries for a history list, entries for a location list, a list of cookies, a list of files in a cache, a list of prior sessions, or a list of domains visited by a user. User input is received (step **904**). The user input may be, for example, a selection of an entry within the window, a selection of a control, such as a button, or a movement of the pointer.

Thereafter, a determination is then made as to whether an item is selected by the user input (step **906**). If the user input is not a selection of an item, a determination is made as to whether the user input is a selection of a delete button (step **908**). If the user input is not a selection of the delete button, a determination is made as to whether the user input is a selection of a cancel button (step **910**). If the user input is not a selection of the cancel button, a determination is made as to whether the user input is a selection of a done button (step **912**). If the user input

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is the selection of the done button, the process terminates. Otherwise, the process returns to step **904** as described above.

With reference again to step **910**, if the user input  
5 is a selection of the cancel button, any highlighted entries are unhighlighted (step **914**) with the process then returning to step **904**. Turning back to step **908**, if the user input is a selection of the delete button, any highlighted entries are deleted from the history (step  
10 **916**). The highlighted entries are then removed from the window (step **918**) and the process returns to step **904** as described above. With reference again to step **906**, if the user input is a selection of an entry, the entry is highlighted (step **920**) with the process returning to step  
15 **904** as described above.

With reference now to **Figure 10**, a flowchart of a process used for deleting or discarding information from a history is depicted in accordance with a preferred embodiment of the present invention. The process  
20 illustrated in **Figure 10** may be implemented in as more detailed description of step **916** in **Figure 9**. In particular, this process is used to handle the selection of an entry, representing a session or a domain, in a window, such as window **600** in **Figure 6**.

The process begins with a determination as to  
25 whether the entry is a session (step **1000**). If the entry is a session, all history information is identified for the session (step **1002**). The identified information is discarded (step **1004**) with process terminating  
30 thereafter. Turning back to step **1000**, if the entry is not a session, all history information associated with

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the domain is identified (step **1006**) and the process proceeds to step **1004** as described above.

Thus, the present invention provides an improved method, apparatus, and computer implemented instructions  
5 for preventing tracing of Web pages or Web sites visited by a user. This advantage is provided by disabling various mechanisms used to record information to form a history for a Web page or Web site visited by the user. This mechanism allows for increased anonymity and privacy  
10 to users. This feature is useful for users who wish to purchase items on-line or view personal information without allowing others to later view this information through a recorded history.

It is important to note that while the present  
15 invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in the form of a computer readable medium of instructions  
20 and a variety of forms and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include recordable-type media, such as a floppy disk, a  
25 hard disk drive, a RAM, CD-ROMs, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions. The  
30 computer readable media may take the form of coded formats that are decoded for actual use in a particular data processing system.

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The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiment was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

For the purpose of the present invention